

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

166.3
M68
no. 31

Copy 2

FARM CREDIT ADMINISTRATION
UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON, D. C.

MARKETING MAINE POTATOES

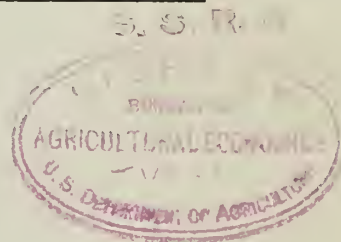
ORGANIZATION
AND MARKET PRACTICES
IN MAINE AND BOSTON

Preliminary Report

166.3
M68
no. 31

MAR 11 1941

By
MAYNARD A. HINCKS
and
GORDON W. SPRAGUE



COOPERATIVE RESEARCH AND SERVICE DIVISION
in cooperation with
MAINE AGRICULTURAL EXPERIMENT STATION

Miscellaneous Report No. 31

November 1940

INV. '60

FARM CREDIT ADMINISTRATION

A. G. Black - Governor

COOPERATIVE RESEARCH AND SERVICE DIVISION

T. G. Stitts - Chief

W. W. Fetrow - Associate Chief

MARKETING MAINE POTATOES

ORGANIZATION AND MARKET PRACTICES IN MAINE AND BOSTON

By

Maynard A. Hincks

Asst. Agricultural Economist

MAINE AGRICULTURAL EXPERIMENT STATION

and

Gordon W. Sprague

Senior Agricultural Economist

FARM CREDIT ADMINISTRATION

CONTENTS

	Page
Some Requirements for a Good Terminal Market	2
Boston Potato Markets	3
The Charlestown Produce Market	5
The New York, New Haven, and Hartford Market Terminal	6
The Faneuil Hall Market	7
The Steamship Docks	7
The Regional Farmers Markets	7
Desirability of Reorganization	8
Types of Dealers	9
Retail Chain Stores	9
The Charlestown Market Receivers	9
Commission Merchants and Brokers	11
Joint Account Relationships	11
Hucksters and Truckers	11
Shipping Potatoes to Market	12
Shipping Potatoes by Boat	12
Carlot Receipts of Maine Potatoes in Boston	14
Diversion and Reshipment of Potatoes	14
Reshipping from Charlestown	15
Costs and Practices in Selling Potatoes at Maine Shipping Points	17
Disposition of Car on Arrival	19
Some Costs of Operation in the Charlestown Produce Market	19
Some Reasons for Packaging in Boston	21
Costs Related to Volume	21
Potato Grades and Standards	22
Some Packaging Practices	24
Importance of Undergrade Potatoes in Consumer Packages	27

NOTE. - The authors wish to acknowledge the contributions of members of the staff of the Maine Agricultural Experiment Station, and of Miss Gertrude G. Foelsch, Kelsey B. Gardner, and other members of the staff of the Cooperative Research and Service Division of the Farm Credit Administration.

ORGANIZATION AND MARKET PRACTICES IN MAINE AND BOSTON

(This study relates to the organization of market places as it affects the wholesale marketing of Maine potatoes in and through the Boston market.) For producers of Maine potatoes who ship to Boston, the organization of market places includes the location of markets and marketing facilities near the points of production as well as those in and around Boston. The business practices of the various handlers of potatoes, both in Maine and in Boston are also important. Producers are interested in the services rendered by each of these handlers and the charges which are made for their services because they affect the net returns for the crop. Consumers also are concerned because the charges made for marketing services usually are partly reflected in retail prices. Dealers operating in the various market places are interested because the efficiency of the distribution system of which they are a part will be reflected in their ability to meet competition from other systems of distribution.

The organization of market places, including location, physical facilities, business organizations and practices, in the marketing of an agricultural crop is important to producers because it is likely to affect the cost of marketing and the returns for the crop. For instance, if the market places are widely distributed and poorly located from the point of view of actually moving the product from one place to another, cost may be increased. In general, the location of marketing places should be such that there is a minimum of handling of the product between the producer and the consumer. Congestion in markets also has an important bearing since congestion is likely to cause unnecessary handling and damage, particularly to perishable commodities. It also causes loss of time which, in many instances, increases deterioration and marketing costs.

The problem of the location of the market cannot very well be considered separate from the facilities for marketing. The facilities are usually the stores, cold storage

warehouses, and handling equipment, as well as the streets, highways, and transportation equipment. If there are too many buildings and facilities there will be a tendency toward inefficiency in their use. If there are too few of them, however, part of the crop is likely to be improperly housed or improperly processed, or roughly handled, in each of which cases damage and loss of value is likely to result, as well as loss in time occasioned by rehandling. For instance, when a product has to be moved from one wholesale market place to another within a city, as is frequently the case in Boston, the rehandling entails losses in time and added expense, as well as increases the likelihood of damage to the product itself.

Producers are also interested in the kind of competition which occurs between the place at which a product is first sold and the point of final distribution to consumers. This competition affects not only the practices by which the product is distributed, but also the extent to which costs may be held to a minimum. In transportation particularly, producers are interested that the rates charged for hauling are not in excess of those necessary for the adequate handling. Operating margins may exceed the necessary cost. Also services may be installed along the marketing channel, the need for which is not clear. In such cases charges against the volume of business are likely to increase the cost of the product to the consumer, and decrease the price received by the producer. Producers recognizing such conditions may sometimes reorganize their own marketing institutions in such a way as to avoid them.

Practices in marketing have a broader implication. Some, like the practice of selling according to quality, the development of efficient marketing organizations on a cost basis, and the development of efficient organization on the basis of quality conservation, are to be considered as commendable. They promote equitable distribution both of the product itself and of the returns from

its sale. Other practices, such as those which unnecessarily increase cost, or those which cause deception either of producers or consumers are usually to be considered as detrimental. In this field also the producer, recognizing these practices, may sometimes organize in order to avoid them.

Producers should be as interested in the organization of the central markets through which their products must flow to the consumer as they are in the organization of the local markets closer at home. Inefficiencies in terminal markets may be even more important to producers than in the local markets because more products are handled there, and the effects of inefficiency are more widely distributed. Conditions in these markets, however, usually have not been so carefully considered by producers because, being so far from home, it is more difficult to do anything about them. Since producers are concerned with central markets, some of the potato marketing problems which occur in Boston are discussed here.

The market places of Boston have grown up partly in response to the need for them and also partly in response to the attempts of the various interested agencies such as the railroad companies to recognize the problems of their shippers. ^{1/}

SOME REQUIREMENTS FOR A GOOD TERMINAL MARKET

One of the first requirements for a satisfactory terminal market place in Boston at which potatoes would be handled is facilities for all types of transportation. Since Boston is an important seaport, the market place should preferably be located close enough to the steamship docks to encourage receipts and reshipments by boat. In addition, the long distances over which potatoes are transported make it necessary that adequate rail facilities should be present, including interconnecting services between railroad lines. At certain seasons of the

year the potato market supply comes almost entirely from southern production points in the transportation of which rail, truck, and boat facilities are used. Motortruck facilities should, therefore, be included at the market both because of the problem of distribution in and around the city of Boston, and also because there are some direct receipts by truck. An adequate marketing place should be equipped for the handling of these potatoes.

Another requirement for a good market is that it should be located close to the center of population of the distribution area. This requirement would be rather difficult to meet in Boston provided the market were also located close to water, since the ocean port facilities are located well to one side of the center of population. Location close to the center of population minimizes the redistribution hauling costs. Adequate transportation provided in the form of streets and highways minimizes the importance of location close to the center of population.

Another requirement is that the market place should be open to all types of dealers. There should be warehousing and office space for wholesale receivers who purchase large lots, as well as commission merchants who receive and rehandle the products for their principals. Facilities should be provided for retailers who come to the market to purchase their requirements; therefore, the potato market should be located where a wide variety of other food commodities are available. This minimizes the cost of securing stock to the retailer.

In addition to the provision of streets and unloading docks for receipts, equipment should be provided for a farmers' market. It might be desirable that a terminal market include facilities at which an auction could be conducted. The desirability of an auction market for potatoes, however, was not one of the objectives of this report.

The question whether a large consuming market should be served by one central market

^{1/} For a more detailed description of the problem of establishing a satisfactory city market, the reader is directed to "The Wholesale Fruit and Vegetable Markets of New York City," a special report made by the Bureau of Agricultural Economics and the Agricultural Marketing Service of the U. S. Department of Agriculture covering the New York City markets.

place or by a group of smaller market places has been frequently discussed. The argument for establishing several smaller markets is supported by the fact that distribution costs from the market are reduced if wholesale supplies are placed close to the retailer buyer. If the operation of several markets, however, entails the transportation of wholesale lots from one market to the other, it is usually considered objectionable because of increased rehandling cost and increased probability of damage to the product. More important probably is the fact that many buyers do not like to patronize a subsidiary market. The variety in both number of items and quality is likely to be greater in larger markets. Retailers may not be so interested in the actual amount they pay for a commodity as they are in the fact that their competitor is not able to buy at a lower price. Therefore, retailers like to patronize the larger market as the one at which prices are most likely to be determined and at which the largest number of competitors are likely to be buying a supply, thus insuring equality in cost of merchandise.

Present locations of markets may result from a variety of causes. Transportation agencies sometimes establish marketplaces and facilities as a service to their shippers. Old and established markets may be maintained even under unfavorable conditions because of dealers' investments and the rentals which accrue to them there. The cost of moving and reestablishing a market may be very great, exceeding that which should be expected from a private concern. The wholesale market place for a large population, however, is a matter of public concern. Increased efficiency from more economical location and facilities may justify public expenditure for this purpose.

Potato producers in Maine should be interested in the efficiency of Boston markets, because some of their product flows through these channels of distribution. If the market places are not well located or if costs of distribution are unnecessarily high or practices are unsatisfactory, the producers may be able to develop more efficient terminal market organization. A producer's organization also may take a long-range point of

view with respect to the distribution of the product, looking toward the gains which are likely to accrue in the future from the fact that consumer goodwill is established at the present. Equitable treatment of the consumer, with reference to the cost of the product, and its quality, is likely to contribute to this long-range benefit. Thus the practices in the wholesale market as well as problems of location and organization may be equally important.

BOSTON POTATO MARKETS

The Boston metropolitan area is decentralized as a potato market since there are five places where supplies are assembled for local distribution. Additional important sources of supply are the distribution system of the three major retail food chains in Boston. The locations of these assembly points within the area are shown in figure 1.

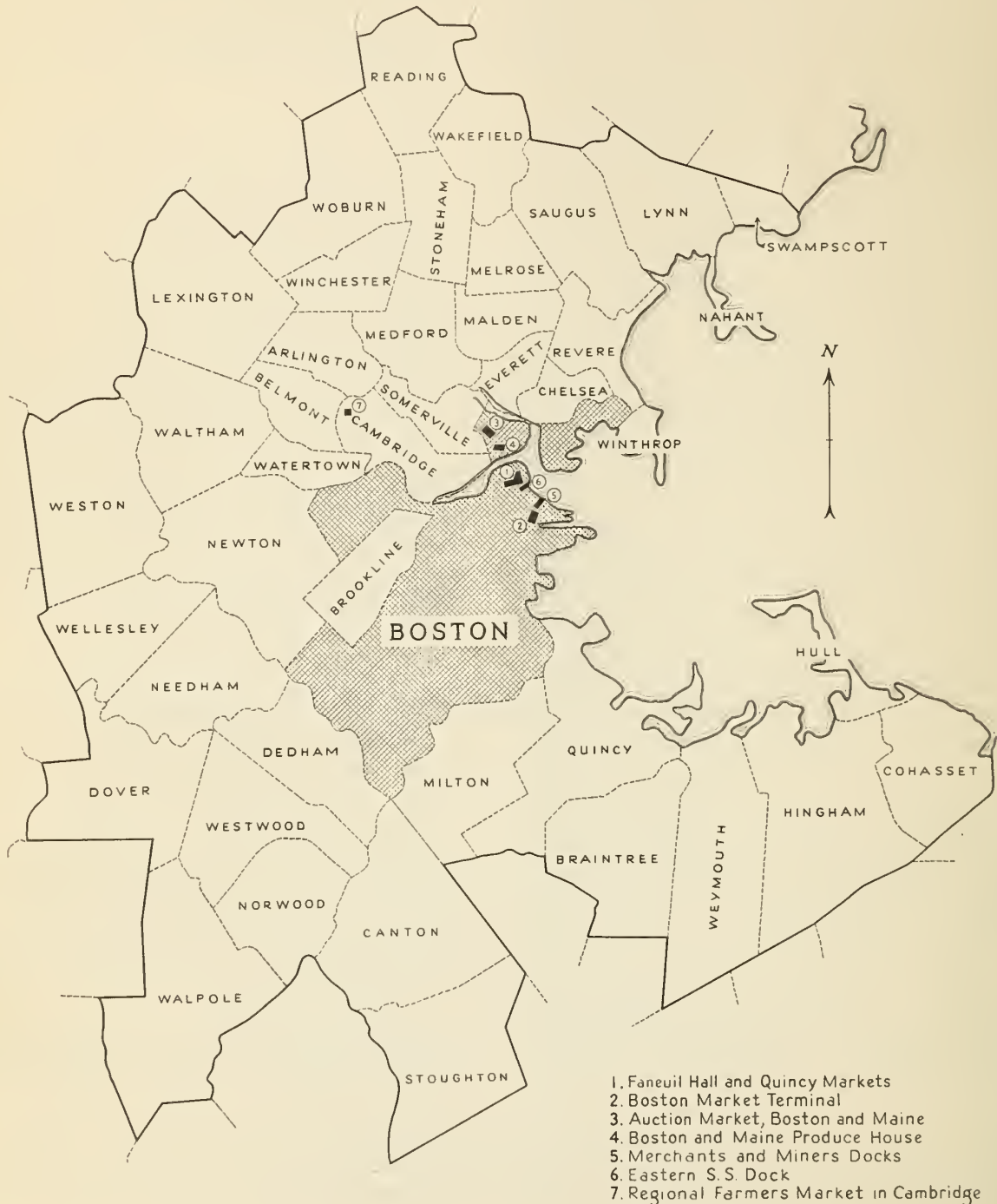
The two most important wholesale market places in Boston are the terminal of the Boston and Maine Railroad at Charlestown, known as the Charlestown Market, and the terminal of the New York, New Haven, and Hartford Railroad, known as the Boston Market Terminal. Late crop potatoes, mostly from Maine, when received by rail, usually arrive at the Charlestown Market. Early or intermediate crop potatoes, when received by rail, are more likely to arrive at the Boston Market Terminal. Either market can be the destination of a carload of potatoes from any area, however, since the two terminals have a rail connection.

The Faneuil Hall and Quincy Market (usually known as the Faneuil Hall Market) lies between the two railroad terminals but has no rail connections, being mainly a farmers', jobbers', and retail market, and the one at which most of the Boston motortruck arrivals are unloaded.

The steamship docks are also important concentration points for incoming early crop potatoes from the South and for outgoing late crop potatoes mostly from Maine, many of which are hauled by rail to Boston and shipped by boat to southern ports. Some imported seed and table stock potatoes from Canada also arrive at these docks.

Figure 1

Wholesale Markets for Fruits and Vegetables in Boston Metropolitan District



No. 17623

Figure 2
THE CHARLESTOWN POTATO MARKET



The Regional Farmers' Market in Cambridge serves as an outlet for some nearby farmers who have potatoes to sell in the Boston metropolitan area.

Truckers distribute some potatoes in Boston. Part of their supplies come from the market places listed above. Some, however, come directly by truck from producing areas or from other markets outside the Boston metropolitan area.

An important part of the potato supply flows into Boston through the procurement agencies of the three major chain store systems. These are not to be considered as market places, however, since most of these supplies are purchased outside of Boston or from dealers in the Boston wholesale markets.

THE CHARLESTOWN PRODUCE MARKET

The Boston and Maine Railroad has provided terminal market facilities including sidings and potato warehouses, or stores, in the Charlestown district, a part of which is occupied by a group of wholesale potato dealers. Carloads of potatoes are unloaded from the railroad sidings directly into the warehouses and loaded into trucks for redistribution from the opposite side of the same warehouses. The physical organization of the Charlestown Market is illustrated in figure 2.

The Boston and Maine Railroad owns the properties at the Charlestown Market and leases them to potato dealers. Truck receipts are prohibited in this market by the

railroad, but the rule is difficult to enforce. However, it serves to reduce the number of truck receipts in this market because there is the possibility that the trucks will not be permitted to unload.

Dealers in the Charlestown Market specialize in potatoes, but dry onions, cabbage, and turnips are sometimes handled in small volume. Retailers patronizing other markets for their supplies of other commodities consequently purchase their potatoes there, reducing direct retailer patronage at Charlestown.

Some very important potato marketing services are performed by the dealers in the Charlestown Market. These dealers are equipped with warehouse space for assembling stocks to insure a regular market supply. They assemble carlots and sell carlot and job lots to other Boston wholesale dealers. Grading, sorting, reconditioning (figure 3), and packaging services are performed at the Charlestown Market. These services require warehouse facilities, made necessary because under some conditions potatoes are very perishable. Mixing and repackaging will be discussed in more detail later. The re-

Figure 3
REHANDLING DAMAGED POTATOES IN A WAREHOUSE
IN THE CHARLESTOWN POTATO MARKET



ceivers finance some potato shipments both through the payments of drafts drawn against them by shippers and, in some cases, by direct purchases in producer markets in Maine.

Dealers in the Charlestown Market reship potatoes from Boston to other markets. Once an important source of revenue to these dealers, this activity is now declining. Reduced revenue from reshipments has caused some of them to expand their business in supplying the Boston market. The high degree of specialization in the Charlestown Market, has discouraged retailer patronage. This has made it necessary for some of the Charlestown market dealers to operate also in other Boston wholesale markets. If the reshipment business continues to decline, the need for more efficient distribution within Boston is likely to become more pressing. Potatoes unloaded at Charlestown for distribution in Boston are often handled at this market and then moved to other wholesale markets for resale. There is an extra handling required in this process, part of which could be avoided if the unloading and warehousing services were performed in a wholesale market with greater retailer patronage.

THE NEW YORK, NEW HAVEN, AND HARTFORD MARKET TERMINAL

The terminal market facilities provided by the New York, New Haven, and Hartford

Figure 4

THE BOSTON MARKET TERMINAL SHOWING OFFICE SPACE PROVIDED IN UPPER STORIES



Figure 5

THE BOSTON MARKET TERMINAL SHOWING UNLOADING PLATFORMS



Railroad are important as a market through which potatoes pass en route to Boston consumers. Facilities, owned by the railroad company, are leased to a corporation composed of dealers who are organized as the Boston Market Terminal (figures 4 and 5). Maine potatoes are delivered here via rail from the Charlestown Market, or directly from Maine. Some Maine potatoes are distributed in Boston by jobbers from this market because it is more conveniently located than the Charlestown Market for jobbers in the eastern and southern sections of Boston, as well as the cities to the south. ^{2/}

A deliberate attempt was made to limit this market to wholesale functions by making the smallest unit of sales so large as to exclude most retailers. Some retailers, or groups of them, however, have been able to patronize this market by pooling their purchases.

The New York, New Haven, and Hartford Railroad, like the Boston and Maine Railroad, has attempted to meet truck competition by refusing to allow truck receipts at the Boston Market Terminal.

Although situated on the New York, New Haven, and Hartford Railroad line, this market can be reached from Aroostook County by rail. A small but perhaps increasing volume of potatoes originating in Maine, and with

^{2/} Maine potatoes were first handled at the Boston Market Terminal for the convenience of buyers.

Boston as destination, is shipped directly to this market.

Several of the dealers operating in Charlestown Market have space at the Boston Market Terminal. By this process their outlets for local sale are increased. The practice of operating at two locations, however, may increase the cost of distribution as compared with a more centralized terminal where only one would be required.

The Boston Market Terminal, unlike the Charlestown Market, has no extensive potato warehouse facilities and, therefore, is not adapted to the potato storage and handling operations which are carried on at Charlestown. Lack of these facilities, the facts that truck arrivals are not allowed, and that business from small retailers is not encouraged, limit the usefulness of this terminal as a market for the city of Boston.

Figure 6

TRAFFIC CONGESTION AT THE FANEUIL HALL AND QUINCY MARKET



THE FANEUIL HALL MARKET

An important jobbing market is located in and around Faneuil Hall and Quincy Markets, which are owned by the city of Boston. Much of the property used for marketing purposes, in the area adjacent to these two markets is privately owned. It is here that most of the truck receipts by wholesale dealers are unloaded. Dealers in this market draw on the other Boston markets, as well as nearby production areas, for supplies. The variety of available supplies of produce

other than potatoes is greater than in the Boston Market Terminal, including fruits, vegetables, meats, fish, and dairy and poultry products.

Besides the ordinary jobbing trade, there is a farmers' market where retailers and wholesale dealers purchase direct from producers. This farmers' market is limited to use by Massachusetts farmers and is active all through the period of the year that the nearby farmers have produce to sell.

These markets are seriously limited because they have no rail facilities and they are overcrowded (figure 6). There is little opportunity to extend the market area except by the very costly expedient of wrecking a number of buildings and turning the ground into streets and parking space. The lack of direct rail and water facilities does not recommend this procedure.

THE STEAMSHIP DOCKS

At the docks, boat shipments of late potatoes mostly from Canada, and receipts of early crop potatoes from southern ports, are unloaded. Frequently, large supplies are accumulated here for distribution in the Boston market area. Most of the arrivals at the docks are directed to individual wholesale dealers in Boston. The docks, therefore, are not so much a market place as a specific point reached in the progress of transportation. Nevertheless, when accumulations of potatoes are heavy, many lots are sold at the dock (figures 7 and 8).

Transfer of these potatoes to Charlestown Market or the Boston Market Terminal is usually by rail because truck receipts at these markets are not permitted. However, this rule is difficult to enforce.

The docks are also important in potato marketing because many reshipments to southern ports are by rail to Boston and by steamship from Boston south. These potatoes are usually shipped by truck from Charlestown Market to the docks.

THE REGIONAL FARMERS MARKETS

Within recent years a farmers' market has been operated in Cambridge. This market is owned by producers of fruit and vegetables

Figure 7
TRUCK ENTRANCE TO MERCHANTS
AND MINERS DOCKS



in the nearby production area, but it is not restricted to use by the owners. Seasonally, it becomes an outlet for nearby potatoes. During the fall of 1939, for instance, some southern New Hampshire farmers offered potatoes for sale in this market. There are rail facilities at this market, but trucks are the principal means of transportation. The busy season is during the summer and fall months.

When the Regional Farmers' Market was established it was hoped that a sufficient number of dealers would make use of the facilities to create a year-round source of retail supply, thereby relieving the congestion at Faneuil Hall. Dealers who moved to the new location, however, returned to Faneuil Hall complaining of insufficient trade. Other dealers have argued that the market was not centrally located. There is, nevertheless, a large consuming population in the suburbs of Boston adjacent to and seasonally supplied in part from this market.

DESIRABILITY OF REORGANIZATION

Boston has no single market place adequate to serve at one time and place the needs of all kinds of dealers who might wish to operate there. The Faneuil Hall Market, the traditional market place for Boston, has become inadequate as to size and facilities. In this respect, the Boston Market Terminal or the Charlestown Market is probably best equipped. Warehouse space for potatoes and terminal services for farmers, truck drivers,

and retailers have not been provided at the Boston Market Terminal, and the Charlestown Market is too highly specialized to be of service for general retail supplies. Development of either of these markets would greatly increase its usefulness to the city of Boston and this possibility operates as a check upon the development of marketing facilities elsewhere.

The determination of the most desirable form and location for a wholesale produce market for Boston was not proposed as an objective of this study. Neither could such a conclusion follow reasonably from a study of the organization for potato marketing alone. But the problem of marketing organization for potatoes is probably so much a part of the larger problem that separate conclusions are impossible.

Efficiency of terminal markets is important to the dealers who operate in them as well as to the producers and consumers who depend on them for selling and buying their supplies. Judged by current standards, a study of the Boston market might point to important gains from comprehensive market reorganization. Such study, however, is often not justified without active interest and strong support from interested groups within the market area.

Pending such further extension of existing information, it is important that producers of potatoes in Maine recognize the organization problems of the Boston market and

Figure 8
STEAMSHIP LOADING AT MERCHANTS
AND MINERS DOCKS



conduct their own marketing activities in such a way as to avoid as many of them as possible.

TYPES OF DEALERS

The routes through which Maine potatoes reach the Boston market are described in connection with the operations of the various types of dealers engaged in distribution of the Maine potato crop. Some operate in Maine producer markets, others in Boston, and still others operate in both producer markets and in Boston. One important type of dealer, on a volume basis, is the retail food chain. Charlestown Market dealers are also very important, operating either as commission merchants, or as wholesale receivers purchasing the product outright. Brokers are important potato marketing agents operating both in Maine and in Boston. Truckers and hucksters operate seasonally. An understanding of these dealers, their places and practices in the distribution of potatoes, is important to an understanding of wholesale marketing.

RETAIL CHAIN STORES

There are several retail chain-store systems in Boston which sell potatoes. The smaller ones usually make their potato purchases from Boston wholesale potato dealers. The larger ones, however, purchase late crop supplies in Maine, using the Boston wholesale market only when direct receipts are inadequate, or as a place for selling excess stocks. The use of the Boston wholesale potato market by the chain-store buyers lends flexibility in potato procurement to these chain-store organizations.

The chain-store policy of making purchases in producer markets has reduced the volume of potatoes passing through the Charlestown Market. One chain-store organization is a part of a National system of stores having a common buying agency. This agency is perhaps the largest single buyer of Maine potatoes, operating warehouses at many of the shipping points throughout Aroostook County. The supply for Boston is ordered from this buying agency. Another chain-store organization operating primarily in Boston and vicinity also maintains warehouse organi-

zation in Maine for buying potatoes. A third chain does not operate facilities in Maine but sets up quality requirements for its brands and buys part of its supplies from packers and shippers of potatoes in Maine, and the remainder from wholesale receivers in Boston.

The chain stores do not maintain large supplies of potatoes in Boston, probably because of the cost of storage and risk of loss through deterioration. They gear their procurement operations as closely as possible to sales, preferring on occasion to use the local wholesale market as a source of temporary supply. To the extent that carlot arrivals can be unloaded directly into trucks and routed to the store units, handling and storage costs are reduced.

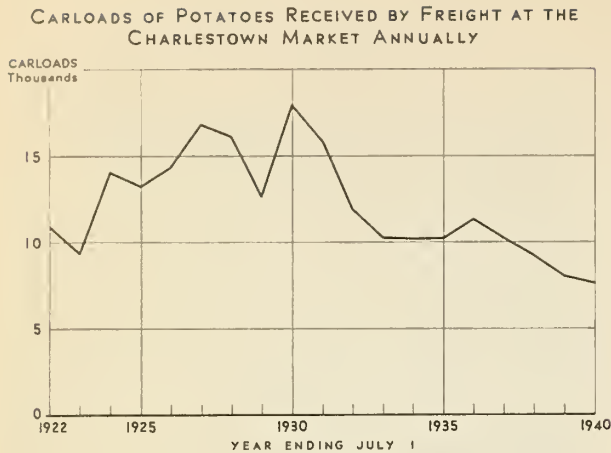
The chain stores, because of their opportunity for practicing selection in supplies, are usually in a strong position to determine the character of the potatoes consumers buy, at least in their branded packages. More information on this subject will be made available in a later release.

THE CHARLESTOWN MARKET RECEIVERS

The volume handled through the Charlestown Market was formerly a much larger percentage of total sales of Maine potatoes in Boston than at present. The policy of the chain stores in purchasing potatoes direct from Maine has reduced the volume of business at Charlestown Market. Rail shipments to areas other than Boston were formerly mostly reconsignments from Boston. This still constitutes an important percentage of the Boston receipts and is usually handled by Charlestown Market wholesale receivers. An increasing volume of direct sales, avoiding the use of Charlestown Market or its dealers' services, is reported, further reducing the volume of business handled there (figure 9).

Some potatoes are handled by the wholesale receivers in Charlestown Market on a commission basis. The volume of this business has declined to where at present it probably represents a small proportion of the total of Boston receipts from Maine. Commission sales

Figure 9



of potatoes usually are heaviest in the early fall months when supplies are largest.

The decline in volume of commission business was probably the direct result of the decline in total volume of potato sales handled in Charlestown Market. Dealers must have an adequate volume of business to insure unit operating costs low enough to maintain efficient operations. With the total volume passing through the market reduced by diverting potatoes through other marketing channels, dealers in the Charlestown Market could not depend on the volume of consignments to maintain their individual operating efficiency and were forced to resort more to outright purchases.

Some wholesale receivers maintain warehouses and purchasing representatives in Maine, where lots of all sizes are assembled.

Many producers have potato storage houses at the farm from which they truck their potatoes to the railroad siding. There is track storage at various shipping points in Maine to accommodate 8,300,000 barrels, about half of a normal Maine crop. ^{3/}

In addition to the buyers' representatives located in the producers' markets, there are brokers who serve to complete arrangements for purchase and sale between shippers (often producers) and wholesale market buyers. The broker does not take ownership of the product

sold. He merely brings buyer and seller together, but nevertheless forms an important link between buyers and sellers of Maine potatoes.

In other instances wholesale market buyers establish direct contact with carlot shippers and operate without the broker's services. Such relationships between buyers and sellers are frequently found. They often last over many years, their continuation depending on satisfaction of each with the service of the other.

The wholesale receivers in the Charlestown Market lease their space from the railroad company. Rentals are calculated on the basis of \$500 annually per one-door unit, that is, space with one door on the track where cars are spotted and one door on the street where trucks are loaded.

Wholesalers at this market perform many jobbing functions, such as sales of broken lots, processing, and packaging for retailers. There is also some retailer patronage which comes directly to the Charlestown Market including some chain stores, hotels and restaurants, and some independent retail grocers. Deliveries are made, and to some extent credit is extended to small dealers and retailers. Some wholesalers maintain trucks, while others operate on a cash and carry basis. Others hire trucking service when needed, at the local rate.

Cars unloaded in Boston for local distribution may be rehandled by the Charlestown Market receivers, as follows:

1. They may be sorted to remove excess rot and damage.
2. They may be sorted to comply with size requirements of buyers.
3. They may be repacked in peck packages.
4. They may be repacked in 100-pound bags with different brand and quality terminology.
5. They may be mixed, usually for the purpose of meeting competitive prices.

^{3/} From unpublished material by Smith C. McIntire, Farm Management Specialist, Extension Service, University of Maine, Orono, Maine, October 1935.

6. They may be resold in original packages without any rehandling.

The costs of handling potatoes in the Charlestown Market depend on the amount and kind of rehandling necessary. If passed through the dealer's place of business without grading or repacking, the costs may be as low as \$20 per car. If repacked in pecks, the costs may amount to upwards of \$50 per car or even to \$80 or more if package costs are included.

Several Boston receivers in the Charlestown Market unload 100-pound sacks of potatoes and repackage them into pecks. Some of these pecks are reloaded and reshipped to the Boston Market Terminal or to Faneuil Hall Market and sold to retailers and jobbers there. Other retailers and jobbers buy retail packages in Charlestown Market.

COMMISSION MERCHANTS AND BROKERS

As indicated above, most of the Maine potatoes received in the Boston market are purchased outright by the wholesalers and dealers who operate there. Some of the potatoes, however, are handled by these receivers on a commission basis, in which case the dealer does not own the potatoes but handles them for the account of the shipper and charges the shipper for marketing services. The commission merchant may recondition, repack or reship the consignment of potatoes just as he would do if they were his own property. He does not own them, however, and performs his services at the direction of the shipper. The commission type of relationship between the shipper and wholesale market receiver is reported to be declining in favor of outright purchasing.

Brokers are found in both the producers' and in the wholesale markets. They serve as intermediaries only, since the broker neither owns nor handles the potatoes. The principal service of the broker in the marketing of potatoes lies in the fact that he has a wide acquaintance among both buyers and sellers. He receives bids from prospective buyers and offers from prospective sellers, bringing the buyer and seller together. In some instances, brokers may be more interest-

ed than merely bringing the buyer and seller together. For instance, the buyer may ask the broker to report on the quality of the potatoes offered for sale. He may even ask him to supervise the loading or to handle some financing arrangement.

JOINT ACCOUNT RELATIONSHIPS

Sometimes Maine potatoes are sold on the basis of a joint account relationship between a grower or shipper and a receiver. Where such a relationship exists, the producer or shipper, who may be both, ships the potatoes to the receiver, usually on open bill of lading. On such billing, the receiver has only to pay the freight charges to obtain release of the car. When the potatoes are sold, the profit or loss on the car is divided, and the shipper's account is credited or debited, as the case may be. The terms governing the operation of a joint account relationship are prearranged and naturally can and do vary considerably, depending on the interests and contributions of those who enter into this method of doing business.

HUCKSTERS AND TRUCKERS

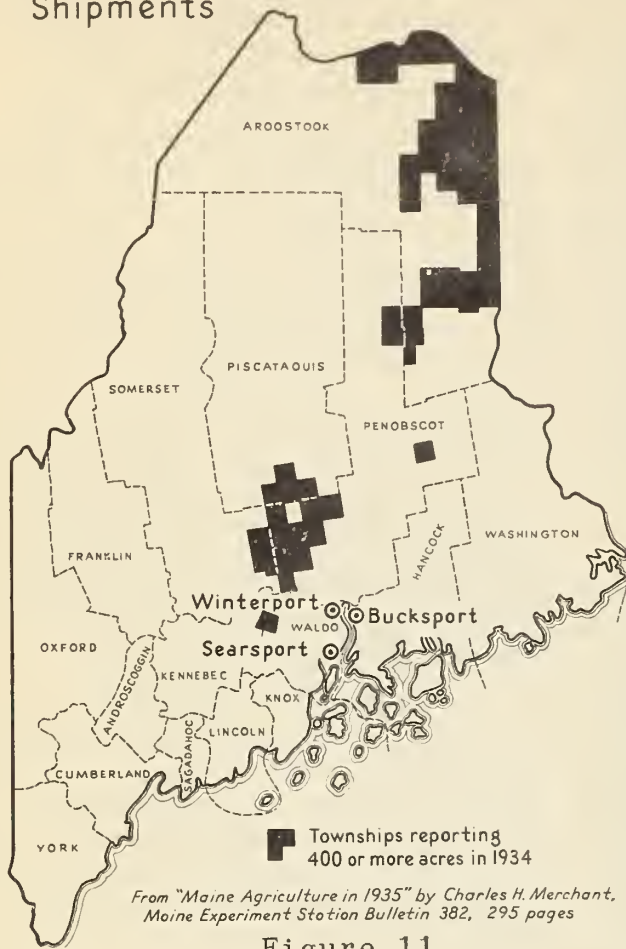
Hucksters and independent motortruck operators have a place in the marketing of potatoes in Boston. As transportation agents they haul a considerable volume of potatoes mostly from central Maine, the Connecticut Valley, nearby Massachusetts, and other producing areas. As dealers they buy potatoes

Figure 10

POTATO WAREHOUSE AT SEARSPORT, MAINE, WHERE POTATOES ARE LOADED FOR SHIPMENT BY BOAT



Principal Potato Producing Areas in Maine and Ports Engaged in Boat Shipments



the nearby production areas are being sent to market. The fact that some producers in the Connecticut Valley and nearby Massachusetts do not have storage space available in which to hold the crop for later marketing probably gives these itinerant dealers a better opportunity to trade with this part of the Boston potato supply.

Insofar as the production of potatoes in Aroostook County is concerned, however, the itinerant trucker of the Boston market is not an important factor. A different type of truck driver relationship is found there. Some of the potatoes produced in northern Maine moved out or at least during recent years have moved out to markets by way of ocean ports. Previously the Bangor and Aroostook Railroad hauled a large part of these potatoes to Searsport where they were reshipped by boat to southern ports. Recent changes in freight structure have stopped the routing of potatoes this way but other ports, during 1939 and 1940, particularly Winterport, (see figures 10 and 11), have been maintained by various agencies for shipping potatoes out of Maine. Transportation to these ports has been mostly by motortruck. During

from producers and sell them to the wholesale dealers. They are also reported to do considerable business with the retail stores of Boston at some seasons of the year. There is some indication that this business with retail stores is looked for by the truck drivers hauling potatoes on their own account because they are denied the use of most of the wholesale markets in Boston. A tendency for independent truck drivers and hucksters to do business with retailers, however, has been noted in many other markets and is not peculiar to Boston alone.

the wintertime many Maine producers have found it desirable to haul potatoes to the ocean ports and thereby derive a small amount of income for themselves. These truckers usually handled their own crops or bought the potatoes from other Maine producers and resold them upon arrival at the ocean ports.

SHIPPING POTATOES TO MARKET

Potatoes from Maine may go to market by water, by rail, by truck, or by a combination of water and rail, and truck.

SHIPPING POTATOES BY BOAT

Activity on the part of these dealers is most important in the fall when the crops from Port facilities for shipment by boat are located at Searsport, Bucksport, and Winterport, (figures 10 and 11). During the 1939-40

marketing season the operations of the Atlantic Commission Company at Winterport made this the most important Maine market with water shipping facilities. Producers or truck drivers brought their potatoes to the Bucksport and Winterport markets and sold them outright. The trucks are especially designed for hauling potatoes in cold weather. They are entirely enclosed and equipped with a small stove by means of which the load is kept free from frost damage. Facilities at Searsport, owned by the Bangor and Aroostook Railroad, handles only receipts by rail. Large warehouses are maintained at all three of these ports, where shiploads can be accumulated.

The recorded shipments of the 1939 crop of Maine potatoes amounted to 37,167 carloads.

Shipments from Winterport and Bucksport amounted to 5.5 percent of the total. Searsport, formerly a very important factor in boat shipments, handled 356 cars or only 1.0 percent. Twelve cars were shipped via St. John, New Brunswick, by boat. Figures for 1939-40 show shipments of 630 cars from Bucksport and 1,405 cars from Winterport, a total of 2,035 cars. The bulk of these shipments were concentrated at these ports by truck. Table 1 shows the destination of the 2,035 cars shipped by boat from Winterport and Bucksport.

Table 1 - DESTINATION AND NUMBER OF CARLOADS OF POTATOES SHIPPED BY BOAT FROM BUCKSPORT AND WINTERPORT, MAINE, 1939-40 ^{1/}

DESTINATION	CARS
Jacksonville, Florida	383
Tampa, Florida	22
Savannah, Georgia	192
Norfolk, Virginia	736
Baltimore, Maryland	200
Richmond, Virginia	198
Miami, Florida	159
Philadelphia, Pennsylvania	110
Wilmington, Delaware	35
Total	2,035

STATE AND FEDERAL SHIPPING POINT INSPECTION OFFICE, CARIBOU, MAINE.

^{1/} These potatoes were trucked to shipping point from producing areas, excepting 11 cars received by rail at Winterport.

Table 2 - POTATO SHIPMENTS FROM SEVERAL MAINE PORTS FROM 1933-34 TO 1939-40

YEAR	CARLOADS OF 36,000 POUNDS SHIPPED FROM				TOTAL
	WINTER-PORT	BUCKSPORT	BANGOR	SEARS-PORT ^{1/}	
	(Carloads)				
1933-34	-	1,033	-	2,952	3,985
1934-35	-	2,159	59	6,850	9,068
1935-36	-	1,099	-	1,288	2,387
1936-37	-	979	-	630	1,609
1937-38	-	1,029	121	1,196	2,346
1938-39	1,189	1,468	104	649	3,410
1939-40	1,405	630	-	356	2,391

SOURCE: BOSTON AND MAINE RAILROAD

^{1/} Shipments via Searsport include cars loaded on Canadian Pacific and Bangor and Aroostook Railroads. Shipments from Winterport, 1939-40, mostly assembled by truck, included 11 cars received by rail at Winterport Station and trucked to the boat. Shipments from Searsport arrived at the port by rail.

There has been considerable variation in the use of these ports and in the total volumes shipped by boat from year to year, as shown in Table 2.

One advantage of shipment by boat is the saving in freight. Another advantage sometimes claimed is that the trucking of potatoes to the ports furnishes employment to many persons in the winter. This advantage may be real from the point of view of those persons in Maine able to avail themselves of it. Unless freight rates are sufficiently lower by boat to permit the inclusion of some hauling charge in the delivered price, this advantage may be small.

As to disadvantages in shipping potatoes by boat, it is claimed that unloading at the port, transfer to the boat, the depth and weight of the stack in which the potatoes are piled in the hold, and the rehandling at time of unloading cause more damage than occurs when shipments are made by rail. This is perhaps a subject deserving further investigation, both to verify the validity of these claims and, if true, to develop means of handling to prevent the occurrence of excessive damage.

CARLOT RECEIPTS OF MAINE POTATOES IN BOSTON

Boston received more carlots of the 1939 crop of Maine potatoes than any other market partly for consumption in Boston and also as a distribution point for Maine potatoes to other markets. A total of 7,985 carlots of Maine potatoes were received in Boston from September 1939 to June 1940, inclusive. The rail receipts were 95.6 percent of the total, with truck receipts making up the remainder.

Supplies of potatoes from Massachusetts and Connecticut tended to retard the shipments of Maine potatoes to Boston in the fall. In the late spring, potatoes from the early crop areas in Florida, Alabama, California, and the Carolinas compete with Maine potatoes in the Boston market. The volume of these early crop supplies usually increases as the season advances.

In table 3, the monthly rail and truck receipts of Maine potatoes for the 1939 crop are shown. March was the month having the heaviest rail receipts with 1,123 cars, or 14.7 percent of the total rail receipts for the season. April followed March very closely with 1,054, or 13.8 percent of the total receipts.

A total of 351 carloads of Maine potatoes were reported trucked into Boston from

Maine during the period from September 1939 to June 1940, inclusive. These truck movements originated principally in central and southern Maine. They were heaviest from January to May. The fact that several of the Boston markets do not permit truck unloading may retard the development of truck transportation for potatoes. Truck shipments to markets other than Boston were not recorded and therefore not available here.

DIVERSION AND RESHIPMENT OF POTATOES

Potatoes may be shipped to Boston by rail and then reloaded from freight cars into boats. If the car is spotted at the wharf and unloaded directly by the steamship company, there is no additional transportation cost. If it is rerouted in transit or re-shipped after arriving at its destination, additional charges are made.

Most reshipments are trucked from Charlestown Yard to the boat rather than having the cars set at the wharf for unloading. The boat companies allow the receivers four cents per 100 pounds, or \$16 per car, for trucking potatoes to the boat. This service can be performed by dealers owning unloading and trucking facilities at costs estimated at less than this amount. By unloading the car at his own place of business, a dealer

Table 3 - MONTHLY CARLOT RECEIPTS OF MAINE POTATOES AT BOSTON BY RAIL AND REPORTED RECEIPTS BY TRUCK, SEPTEMBER 1939 TO JUNE 1940, INCLUSIVE

MONTH	RAIL	PERCENT	TRUCK	PERCENT	TOTAL RAIL AND TRUCK
1939					
September	528	6.9	35	10.0	563
October	636	8.3	31	8.8	667
November	710	9.3	17	4.8	727
December	588	7.7	31	8.8	619
1940					
January	883	11.6	30	8.6	913
February	895	11.7	40	11.4	935
March	1,123	14.7	61	17.4	1,184
April	1,054	13.8	40	11.4	1,094
May	950	12.5	44	12.5	994
June	267	3.5	22	6.3	289
Total	7,634	100.0	<u>1/</u> 351	100.0	7,985

1/ Includes 2 carlots in July 1940. Rail figures are from the Boston and Maine R.R. Co. and Truck figures from the Agricultural Marketing Service.

Table 4 - CARLOADS OF POTATOES RESHIPPED FROM BOSTON
1934-35 to 1939-40

SEASON	BY RAIL ^{1/}		BY BOAT		TOTAL
	(Number)	(Percent)	(Number)	(Percent)	(Number)
1934-35	2,521	51.5	2,370	48.5	4,891
1935-36	3,000	63.2	1,746	36.8	4,746
1936-37	1,740	38.7	2,760	61.3	4,500
1937-38	1,087	30.2	2,507	69.8	3,594
1938-39	1,108	49.8	1,117	50.2	2,225
1939-40	1,871	66.8	930	33.2	2,801

SOURCE: THE BOSTON AND MAINE RAILROAD COMPANY.

^{1/} Includes cars transferred from Charlestown to Boston Market Terminal. The 1939-40 reshippments by rail were but 74.2 percent of the reshippments for 1934-35, and by boat the 1939-40 reshippments were but 39.2 percent of the number reshipped in 1934-35. This decrease in number of carloads reshipped by rail and by boat may be partly due to direct shipment from Maine.

can gain employment for his trucking facilities and labor. Dealers estimate an addition to income from this practice and defend re-handling as necessary to discover damage in the lots which must be removed before reshippment.

RESHIPPIING FROM CHARLESTOWN

By the end of June 1940, 2,801 cars of potatoes from the 1939 crop were reshipped from the Charlestown Market. Of this number, 686 cars were transferred from Charlestown to the Boston Market Terminal. Of the remainder, as shown in table 4, 1,185 cars were reshipped by rail, and 930 cars by boat to destinations farther south. Reshipments are a large part of the volume of cars handled by some of the Charlestown wholesale receivers. Of 3,706 cars received by six receivers, 2,305, or 62.2 percent, were reshipped from Charlestown to other points.

Several Charlestown receivers operate in both the Charlestown Market and the Boston Market Terminal. As truck receipts are not permitted in either market, potatoes are moved from one market to the other mostly by rail. These reshippments are from receipts at Charlestown, some of which may have been held there for repackaging and regrading. The reshippment charge is \$6.93 plus a \$10 unload charge at the Terminal, or four cents per hundred pounds. This is less than standard trucking rates across town, but more than a

receiver would charge for the use of his own truck if he were permitted to use it. In any case, it is a rehandling charge necessary because of organization and practices in the Boston wholesale markets.

Table 4 shows reshippment figures for carlots of potatoes moved from the Charlestown market for the past six years. In the first place, these figures show a tendency for the volume of reshippment of potatoes from Boston to decline. Most of this decline in boat shipments occurred within the last two years. The greatest decline in rail reshippments occurred in the 1936-37 season. These data also show a peculiar lack of consistency in the volume reshipped by the two different transportation routes. In the 1935-36 season, for instance, 63.2 percent of the reshippments were by rail, and only 36.8 percent by boat, whereas in the following year only 38.7 percent were reshipped by rail and 61.3 percent were reshipped by boat. During the 1939-40 season, only 33.2 percent of the reshippments were by boat reflecting in part at least the effect of a downward adjustment of rail freight rates from Maine to southern points.

The general tendency for reshippment from Boston to decline reflects the fact that more and more shippers from Maine points of origin have been making direct sales thereby avoiding the wholesale receivers at the Charlestown markets. By so doing, they presumably save part of the cost of reconsigning or re-

shipping, as well as those parts of the Boston receivers' costs which are charged against such shipments. Shippers who have been able to make direct contacts at southern markets may have gained from this procedure. The cost of operating a wholesale receiver's place of business in the Boston market is still part of the cost of marketing potatoes for that remainder not fortunate enough to have made direct contacts. If such costs have increased because of falling volume, and if they are in fact charged against the shipments of Maine potatoes which are handled by reshipment through the Boston market, or if in lieu of rising margins of cost, practices have been adopted which accomplish the same results by other means, some producers in

Maine may either directly or indirectly have been penalized.

From September 1, 1939, to May 1, 1940, there were 1,746 diversions reported. The diversions were heaviest during the first four months of 1940; March was highest with 345 cars. The figures for May and June 1940 were not available.

Diversions were heaviest to Florida which received 377 carlots of potatoes by this type of shipment, (table 5). Massachusetts points were next with 257 cars. Pennsylvania, Georgia, and New York City received 194, 179, and 159 cars respectively.

Data showing diversions in table 5 and boat shipments in table 1 are particularly of

Table 5 - MONTHLY DIVERSIONS OF MAINE POTATOES
FROM BOSTON, BY STATES OF DESTINATION,
SEPTEMBER 1, 1939 TO MAY 1, 1940

FINAL DESTINATION	1939				1940					TOTAL
	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	
	(Cars)									
Alabama	-	-	-	2	5	14	7	-	-	28
Connecticut	1	1	1	1	4	1	1	6	-	16
District of Columbia	-	-	-	-	1	2	3	2	-	8
Florida	44	62	48	75	60	31	29	27	1	377
Georgia	23	17	1	4	45	29	24	36	-	179
Louisiana	-	1	7	5	1	-	1	-	-	15
Maryland	-	1	3	-	5	2	12	1	-	24
Massachusetts	13	53	42	25	40	15	27	38	4	257
Michigan	-	-	-	-	-	1	-	-	1	2
New Hampshire	3	9	10	3	1	4	2	6	-	38
New York City	-	2	2	-	22	30	59	42	2	159
New York State	-	8	10	2	5	10	38	21	2	96
New Jersey	-	4	-	2	7	5	14	20	-	52
North Carolina	-	-	-	-	-	13	3	1	-	17
Ohio	-	-	-	1	-	-	-	-	-	1
Pennsylvania	-	-	3	25	39	23	50	48	6	194
Rhode Island	-	-	1	1	6	6	11	8	-	33
South Carolina	4	6	9	9	13	29	3	17	-	90
Tennessee	-	-	-	-	-	25	37	5	-	67
Texas	-	-	-	-	2	-	-	-	-	2
Vermont	1	1	-	-	-	-	2	1	1	6
Virginia	-	-	-	-	-	4	22	47	7	80
West Virginia	-	-	-	-	1	1	-	3	-	5
Total	89	165	137	155	257	245	345	329	24	1,746

SOURCE: BOSTON AND MAINE RAILROAD COMPANY.

Figure 12

TRACKSIDE POTATO WAREHOUSE IN MAINE



interest as showing the wide area over which Maine potatoes were marketed.

COSTS AND PRACTICES IN SELLING POTATOES AT MAINE SHIPPING POINTS

While a portion of the crop stored in farm warehouses is graded and packaged there, the more general practice is to haul the potatoes to the trackside warehouses where they are graded, packaged, and shipped, (figure 12). Potatoes stored at the trackside warehouses are graded and packaged when transferred from the bins. The potatoes are usually packed in 100-pound burlap bags or into 10-pound and 15-pound retail packages. ^{4/} Other package sizes and types are sometimes used, but those named are most common. The retail packages used in Maine are especially constructed of strong paper which will stand up under reasonable handling and shipment in freight cars.

The grading process consists of sizing the potatoes, removing those that are too small for satisfactory delivery. In addition, damaged potatoes are removed by men who stand beside the grading machines and pick them out by hand. Small and damaged potatoes are a byproduct of the grading process. The proportion graded out depends on the range in size to which the grade was packed, and the amount of rot and other damage removed.

If too many small and damaged potatoes are in the lot, the percentage thrown out may be so large as to discourage grading, in which case the lot may be shipped without grading, but usually carrying some appropriate grading terminology.

Four hundred burlap bags of 100-pound capacity are needed to load a car of 40,000 pounds. At nine cents each, ^{5/} they cost \$36. Used bags may be purchased for less. Paper containers used for packaging 10-pound bags were estimated to cost 1.6 cents each, or \$64 for a car of 4,000 packages. Peck packages were estimated at 1.8 cents each, or \$48.60 for a carload of 2,700 packages. Prices for paper containers vary depending on the grade of paper used and the number of bags purchased.

The labor cost including sorting, grading, and packaging, is important in loading a car. It was estimated that four men would sack and load a car of 100-pound bags in one day at a cost of \$16 per car, or about four cents per 100 pounds. For loading a car of peck packages, however, seven men are required for eight or nine hours, at a cost of about \$25 or approximately one cent per peck. For 10-pound packages the labor cost is estimated at three-fourths of a cent per package, or about \$30 per car. When grading and sorting is not done the labor cost is much less.

When the services of brokers are used, the brokerage and other selling expense, such as interest on the draft, telephone, and telegraph, and office expense has been estimated at \$30 per car, ^{6/} This is seven and a half cents per 100 pounds, three-fourths of a cent per 10-pound bag, and approximately one cent per peck. When the shipper and receiver, through long and satisfactory experience, trade directly with a minimum of expense, selling costs are materially reduced.

A "reefer" charge of \$5 is made for the use of a refrigerator car. This car has to be preheated in cold weather, and in very cold weather heat is provided to destination. The cost of heat to destination is \$6.35 per

^{4/} 10-pound packages were not used extensively in Boston.

^{5/} Bag prices varied considerably in the 1939-40 season.

^{6/} From estimates published by the Maine Potato Growers and Shippers Committee.

Table 6 - ESTIMATED EXPENSE OF SELLING, PACKAGING AND SHIPPING A CARLOAD OF POTATOES FROM PRESQUE ISLE, MAINE, TO BOSTON, MASSACHUSETTS

EXPENSE CLASSIFICATION	IN 100-POUND BAGS		IN 10-POUND BAGS		IN 15-POUND BAGS ^{1/}	
	COST PER BAG	COST PER CAR	COST PER BAG	COST PER CAR	COST PER PECK	COST PER CAR
	(Cents)	(Dollars)	(Cents)	(Dollars)	(Cents)	(Dollars)
Bags (new) ^{2/}	9.00	36.00	1.6	64.00	1.80	48.60
Labor	4.00	16.00	.75	30.00	.93	23.20
Selling expenses	7.50	30.00	.75	30.00	1.11	30.00
Car cost	3.00	12.00	.30	12.00	.44	12.00
Miscellaneous	1.25	5.00	.12	5.00	.19	5.00
Overage	.32	1.27	.32	12.70	.32	8.57
Packing, Shipping, and Selling expense ^{3/}	25.07	100.27	3.8	153.70	4.8	129.37
Freight to Boston	37.00	148.00	3.7	148.00	5.5	148.00
Total	62.1	248.27	7.5	301.70	10.3	277.37

^{1/} Estimated at 2,700 pecks per car. This cost of packing and shipping 100-pound packages of potatoes to Boston in carlots, as estimated above, was 62.1 cents. The cost of shipping 100 pounds in peck packages was 68.5 cents and in 10-pound packages it was 75.4 cents.

^{2/} Bag prices vary considerably from year to year.

^{3/} Assembled from reports by the Maine Potato Growers and Shippers Committee.

car. When only preheated, the cost is less. In addition, the car is lined with paper as further protection against frost and damage. The total cost of a car including "reefer charge," lining, and heat to destination is estimated at \$12, which is three cents per 100 pounds, .3 of a cent per 10-pound bag, and .44 cent per peck.

Miscellaneous costs, such as power, light, warehouse heat, depreciation on machinery, and general wear and tear, including wastage of supplies, are arbitrarily estimated at \$5 per car, one and one-fourth cents per 100 pounds, .12 cent per 10-pound package, and about .19 cent per peck.

When potatoes are graded before packing, the process usually yields some waste. This waste or shrink is accounted for in the price and is not charged to the cost of marketing.

Retail packages, however, especially pecks or smaller, should contain full weight at the time of retail sale. They must, therefore, contain some overage of weight when packed to take account of some shrinkage and of the fact that it is not feasible to put exact weights in packages, since it would take too much time to sort potatoes to make weight exact. This overage is treated as a marketing cost and increases on a carlot basis, as the size of package is reduced, or the number of packages increased. Estimating overage at one-fourth of a pound per package, it amounts to 1,000 pounds on a car of 4,000 10-pound packages, 675 pounds on a car of 2,700 pecks, and 100 pounds on a car of 400 100-pound bags. ^{7/} The cost of this overage is usually based on the cost of potatoes before packaging. For example, at \$2.10 per barrel, 100 pounds of overage amount to about \$1.27 or

^{7/} Overage of one-fourth of a pound or four ounces per package is estimated as a minimum figure. Some dealers use six ounces as an overage figure. Overrun poundage may also increase the freight cost.

\$12.70 per car of 10-pound bags, and \$8.57 per car of pecks. ^{8/}

To these costs there must be added the freight cost which is 37 cents per 100 pounds ^{9/}, or \$148 per car of 40,000 pounds from Presque Isle, Me., to Boston, Mass. Marketing costs for potatoes prior to their arrival in Boston are summarized in table 6.

DISPOSITION OF CAR ON ARRIVAL

Maine shippers in transporting carloads of potatoes to Boston, Massachusetts, by rail do so under "advise" bill of lading, "order notify" bill of lading, or "open" bill of lading.

The bill of lading is the carrier's contract and includes instructions to the carrier in performing this service. Most Charlestown Market potato receivers furnish bonds to the railroad to facilitate delivery of cars.

Receivers usually are notified of the arrival of the cars at destination once a day at approximately 9 a.m. At 1 p.m. daily each receiver submits a form which advises the railroad company to withdraw empty cars and those loaded for reshipment, and where to set new arrivals for unloading. Cars are set at the warehouse door specified by the receiver, as well as on the track specified, so that unloading may be accomplished. At the time of notification of arrival, the receiver may inspect the car before it is set for unloading, provided the bill of lading permits.

The receiver is entitled to one setting of the car for unloading which may be in the Charlestown Market, the Boston Market Terminal, at the steamship wharf, or anywhere else within the Boston switching area. All other moves after the original setting are done at a charge of \$6.93 per car, or at a switching charge depending upon the nature of the movement.

Forty-eight hours' free time is allowed the receiver following notification of a carlot arrival billed to him, after which demurrage is charged against the car. The 48-hour period begins at 7 a.m., following notification

of the arrival. The free period is calculated only on the basis of working days.

Fifteen days of free time are allowed for a carlot of potatoes in Boston provided the shipment originated outside the Boston area and is for delivery to a steamship company. If the carlot of potatoes originates within the Boston switching limits, 5 days of free time are allowed on boat consignments. The increased free time on water-borne freight at Boston permits the accumulation of water freight tonnage.

Demurrage accounts are operated at the Charlestown Produce Market between the railroad and the receivers, on an average agreement plan. This plan gives the receiver credit for all cars unloaded within the free period, as well as charging his account with the number of days in which demurrage was incurred. If at the end of each month the credits established under this plan exceed the number of days of demurrage incurred, no demurrage is charged. These accounts are operated on a monthly basis and are settled monthly. No accumulation of credits is permitted from month to month. This plan helps the wholesale receivers by reducing the costs of demurrage.

Demurrage charges are assessed at the rate of \$2.20 per day for the first 4 days and \$5.50 per day thereafter. Demurrage is based on continuous time; Sundays and holidays are not excepted, as in the case of calculating free time.

SOME COSTS OF OPERATION IN THE CHARLESTOWN PRODUCE MARKET

There are slight differences of opinion among the wholesale receivers in Charlestown relative to costs of various services performed. Costs may vary with the ability of a receiver to direct his own operations. This study did not include a detailed examination of the individual records of any of the receivers. Some of the common cost elements are discussed based on some operating statements as well as on the opinions of various receivers.

^{8/} A barrel holds 165 pounds, or 11 pecks.

^{9/} Minimum carlot rate.

Union wages are paid to the potato handlers in the Charlestown Market based on an agreement with the union made during the fall period of each year. The union rate during 1939-40 was \$6 per day per man, if hired on a daily basis, or \$5 per day if hired on a weekly basis. If a man was called to work for a half day or less, he received a half day's pay, or \$3. Added wages at overtime rates were paid for overtime work. Five men make up a crew. This number is more or less fixed by the union agreement. In hiring crews, a receiver must have packaging, sorting, or grading to do; otherwise, there is little need for so many men. A few receivers use crews regularly, others use them only rarely.

Cars of potatoes received at the Charlestown Market have to be unloaded into dealers' warehouses. These potatoes may be received in bulk packaged in 100-pound burlap bags or in retail packages of 1 peck or smaller. The practice of shipping potatoes in bulk has been almost entirely discontinued in recent years. One man can unload a car of 400 bags in about one-half day at a cost to the receiver of \$3, or approximately three-fourths of a cent per 100 pounds. The same man can unload a carload of 2,700 peck packages in about the same time at a cost to the receiver of \$3 or approximately one-ninth of a cent per peck. These operations include only the removal of the load from the car and stacking in the receiver's warehouse. On occasion, when the entire carload is removed directly by truck, the bags may be moved through the warehouse and into the trucks at about the same cost for labor.

Sometimes carlots of potatoes in 100-pound packages are transferred from the original bag to another. This operation requires more labor because the potatoes have to be emptied out on the floor and shoveled up into new bags. It is estimated that this operation requires a crew of five men for about one-half day. Dealers estimate this labor cost at \$15 per car, or about four cents per 100 pounds. The labor cost of unloading a car of 400 of these 100-pound bags, reconditioning, repacking, and reloading them into another car varies from \$15 to \$30, depending upon

the amount of reconditioning that is performed. It is frequently necessary to incur this cost because potatoes arriving at the market are poorly sized or include damage of various kinds which must be removed before the car can be reshipped to some other location in Boston or to some other market.

The labor cost of performing a similar operation, but repacking the potatoes into peck packages, is somewhat greater because of the greater number of packages to be handled. Nevertheless, for practical purposes the dealers estimate that this operation also can be completed with a six-man crew operating for one whole day, at a cost of approximately \$36 per car, or about 1-1/3 cents per peck. In most warehouses work is done with the help of machine equipment.

The cost of repacking in peck bags, as estimated above, does not include the cost of the package and ties, which is estimated at approximately two cents per peck. The quality of the paper used in the manufacture of these bags affects the cost, as also does the number of bags purchased by the packer, since quantity discounts are usually given on larger purchases. Against this additional cost of new bags, however, is the reclamation value of the burlap sacks.

Some dealers estimate the cost of labor, bags, and ties at three cents per peck or \$81 per car of 2,700 pecks. This does not include overhead expense but merely the expense of converting a carload of 100-pound sacks of potatoes into peck packages.

The cost of operating the establishments of a wholesale receiver at Charlestown depends very much on the types of operations which are performed. Those dealers who merely receive carlots, and reship or sell them without additional handling, are able to operate on a much lower cost per 100 pounds or per car of potatoes handled, than those who do considerable rehandling and preparation of the potatoes before forwarding them.

Hired trucking usually costs five cents to seven cents per 100 pounds, dependent upon distance. One receiver pays ten cents per 100 pounds for service to the outlying areas on shipments of ten 100-pound sacks.

Each receiver has office help of at least one person, as well as one full-time warehouseman. For the average receiver, this full-time employee can unload most of the cars and sell at the warehouse. If deliveries must be made the additional expense of trucks or trucking is added.

SOME REASONS FOR PACKAGING IN BOSTON

Since packaging costs in Maine are probably less than in Boston, packaging, sorting, and grading insofar as possible should be completed in Maine. 10/ However, some receivers package a considerable volume of potatoes in Boston as indicated in the following example.

On May 16 a local receiver bought a carload of Maine Utility grade potatoes at \$1.55 per 100 pounds. The potatoes without the burlap bag represented a price of \$1.52 per 100 pounds. These potatoes were packaged in peck bags at an estimated cost of three cents per peck for 2,700 pecks. The 2,700 pecks represented an investment of approximately \$689 (\$608 stock plus \$81 labor and bags) or about 25.5 cents per peck.

These pecks were sold in the Boston Market Terminal for 29 cents each, or at the rate of \$1.96 per hundred pounds and \$783 for the carload. The local dealer, after paying packaging costs, received a margin of approximately 23.5 cents per hundredweight. The receiver admitted that if he had retained the potatoes in 100-pound sacks, his margin would have been substantially less.

The potatoes were placed in a peck bag under a trade brand used generally about the market. The Utility grade and packer's name were stamped on the bag. The evidence here is that potatoes of low grade can frequently be sold, if packed in retail packages, at prices which yield a greater margin than when sold to more discriminating wholesale buyers in 100-pound bags.

Such operations partly explain why dealers prefer to have potatoes in 100-pound sacks

in Boston. In some cases mixing operations may make potatoes of unsatisfactory quality or size more easily salable. In other instances markings on packages required by the State of Maine for dealer or consumer protection may be unsatisfactory to Boston wholesale receivers, in which cases potatoes may be repackaged. 11/

Some receivers insist that they cannot take the chance of permitting Maine shippers to select the quality they wish placed in their packages under their own brands. To protect and control this quality, they do their own packing.

In years when there are wide differentials between wholesale prices for potatoes of various grades and varieties repacking operations in Boston become more profitable than in years when prices are lower and margins narrower.

COSTS RELATED TO VOLUME

Volume of business is an important cost factor in the operations of a potato receiver at the Charlestown Market. During the 1939-40 season, 7,624 carloads of potatoes were handled through this market by about 16 receivers, an average of 476 cars per receiver. Some receivers handle a much larger volume, however, and six of the largest receivers handled over half of the total showing that the volume handled by some receivers was much smaller. This widely varying volume as well as the variation in the character of individual operations as between the 16 receivers limits the usefulness of cost data which might be available. A comparison between two of them, however, showed that one handled a volume of slightly more than 100 cars per year, the expense of management was only \$2,500 but the cost per car was more than \$100 whereas the other handled over 1,000 cars, the manager's salary was over \$5,000 and the cost per car was about \$22. These are extremes as to costs but the two receivers

10/ Potatoes have to be packed for shipment. Packing in Boston requires opening of original packages and repacking.

11/ Paper tags of various colors attached to sacks to indicate grades are removed by dealers whenever desirable.

ers conducted about the same type of business, and the difference was mostly due to volume.

It may be true that if the volume of a business is slowly decreasing, the retrenching which should accompany such a recession of volume, does not always occur as promptly as changes occur when volume is increasing. This is particularly important to Maine producers as the volume of business flowing through the Charlestown Market declines.

The minimum expense of operating a potato store in the Charlestown Market is likely to be \$10,000 or more annually, depending on the type of operations performed and the amount of salary withdrawn for management. Rent for a 2-door unit (2 doors on the track and 2 on the street) is \$1,000 per year. An office clerk is necessary at an estimated minimum salary of \$1,200 per year. Some dealers have additional office help. Buying and selling expense, including telephone, telegraph, and travel, are estimated at a minimum of \$500 per year although the dealers with large volume find it necessary to spend much more. Bond and interest expense is likely to amount to \$500 per year, and other miscellaneous expense is estimated at an equal amount, making a total of about \$3,700 for rent and administrative expense without withdrawal for management.

It is necessary that a warehouseman be hired at a minimum union wage which would be about \$1,600 per year. The warehouseman handles small volumes of business alone but in busy seasons needs a helper for which \$800 per year has been estimated. If store operations include repackaging, crews must be hired in addition, but additional warehouse labor used only on occasion has been omitted from this estimate as applying only to particular lots of product or to more specialized operations. Truck service is usually necessary. If hired, it is paid for as used. Some dealers maintain their own trucks at considerable variation in annual cost, depending on the kind of truck used. Interest and depreciation on a truck have been estimated at \$400 per year. A truck driver hired at the union rate of \$40 per week at full time would cost over \$2,000 per year. Since they are

not always hired for full time, a truck driver's salary of only \$1,000 per year has been estimated. The cost of a warehouseman, truck and truck driver, and helper is estimated at a minimum of \$3,800 per year, a larger outlay for these purposes would be more likely.

If, in addition to the above, the manager or owner withdrew \$2,500 per year in salary - larger withdrawals for this purpose were actually reported by three of the four dealers from whom cost figures were obtained - the total estimated annual cost would amount to \$10,000.

If the total cost of operating a place of business were \$10,000 per year, 400 cars would be necessary to hold costs as low as \$25 per car, about \$3 per car higher than that reported by one receiver. At \$12,000 per year, 480 cars would be required. Since the costs here estimated are minimum costs, it seems that an organization operating in this market should plan on a minimum volume of 500 cars per year, provided the services rendered by it were essentially the same as those now performed by Charlestown Market potato dealers.

Increased services such as reconditioning, repacking, and the like make the expense per car for a wholesale receiver in Charlestown higher.

POTATO GRADES AND STANDARDS

Potato grades and standards are based largely on quality concepts in which defects to individual potatoes or the percentage of these defects in a lot play an important part. Grades also include such classification concepts as size and variety. The purpose of a grading system is to standardize these quality and classification concepts to the end that a grade name may be applied to a lot of the product as an aid to marketing. These grades or trading names are used extensively in the marketing of potatoes, particularly in those instances where buyers and sellers are separated by a long distance and trading must be accomplished without the possibility of personal inspection of the lot. The system of grades now in use, together with the regulations and practices under which they are

used in contract trading have been a very material aid in marketing.

When a grade name is attached to a lot of potatoes it describes for the buyer the quality characteristics and the classification of that product. Variations in prices in any given market on any particular product are likely to reflect differences in grade which are the result of the application of these grading standards. However, one of the most difficult problems in marketing is that of finding and applying standards of quality and classification which adequately describe the product for pricing purposes. The opportunity for misunderstanding between buyers and sellers is greatly increased when wide variations in price occur because of wide variations in market value within a grade.

The U. S. No. 1 grade for round varieties of potatoes contains a minimum size requirement of 1-7/8 inches in diameter unless otherwise specified. If more than five percent of the potatoes in a lot are below this size requirement, it cannot be accepted as U. S. No. 1 grade. In the potato grade, however, only a minimum size requirement is specified, whereas size is one of the most important factors contributing to differences in market price. It has been the general disposition of the grading authority to leave the matter of size, except that of minimum size, to the contracting agents in any transaction. A contract for U. S. No. 1 potatoes may be fulfilled by delivery of a lot of potatoes none of which are much in excess of 1-7/8 inches so long as not more than five percent are smaller. Potatoes of this size are so small as to be unsatisfactory to most consumers.^{12/} In recognition of this fact, various size classifications were provided in the U. S. standards to be used in connection with the grade designation. One of these is U. S. No. 1 size A, in which 60 percent of the potatoes of round varieties must be two and one-fourth inches or larger in diameter. In addition to such classifications, other minimum sizes may be specified such as U. S. No. 1,

two-inch minimum, in which, as indicated, none of the potatoes can be below two inches in diameter with the exception of five percent allowed in the tolerance.

These subclassifications have materially improved the description of the sizes of potatoes included in any lot, since they describe potatoes which are much more acceptable for table stock. But even these classifications include a very wide range of sizes, whereas most consumers prefer to buy potatoes classified within a rather narrow range of sizes but sized for baking since as a general rule, potatoes which are suitable for baking will be suitable for most other uses. The difficulty in the use of the standards arises out of the fact that the grade terminology for U. S. No. 1, size A, or for U. S. No. 1, two-inch minimum, are equally satisfactory for the grade of U. S. No. 1, whereas potatoes in which a very large proportion are under two inches in size but still above 1-7/8 inches are also adequately described as U. S. No. 1, but much less satisfactory for use by the majority of consumers than the larger sizes. To the end that this grading terminology is used in contractual relations between dealers who thoroughly understand the significance of the grading, little difficulty is likely to arise because an adequate description of sizes required is likely to be included in the trading contract. When this grading terminology is used as describing the quality within consumer packages or even in 100-pound bags sold to the retailers or to consumers who are much less familiar with the problems of grading, deception may arise. Cases have been noted in which potatoes of small size but meeting the minimum size requirements for U. S. No. 1 have been placed in peck packages marked U. S. No. 1. When sold to consumers considerable criticism with the sizing has resulted.

In addition to the differences in sizes and the sizing problem, tolerances are provided for defects in the U. S. standards. Since these tolerances are described in rather narrow limits, they are not as serious as the

^{12/} Pages 26-35 Hincks, M. A., Marketing Maine Potatoes: I-A Preliminary Report of Consumer Preference for Potatoes in Boston, March 4 to April 6, 1940. Maine Agri. Exper. Sta. with the Cooperative Research and Service Division, Farm Credit Administration, United States Department of Agriculture, 40 pp. 1940. (Mimeographed).

problem of size. Nevertheless, the tolerances for defects do constitute a problem in marketing which should not be overlooked. The tolerance permitted in U. S. No. 1 grade is six percent. However, damage causing additional defects is almost certain to occur in the process of marketing. If a shipper in Maine packs potatoes to the limit of his tolerance, it is quite likely that the package on arriving in the home of a consumer will contain defects in excess of the tolerance permitted. In other words, if the shipper in packing his peck packages uses a full six percent of tolerance at the time of packing, it is quite likely that when the package arrives in the home of a consumer the percentage of defects to be found will be in excess of six percent. Consumers, because of habit and custom in the purchase of potatoes, have come to expect some defects in the potatoes they buy. They recognize their presence, nevertheless, as indicated in a survey of consumers' ability to detect these defects. ^{13/}

Experience of many shippers in the packing and shipping of potatoes has indicated that the tolerance for defects can be held in check to a sufficient extent that most of the potatoes upon arrival at the market will be within the limits of tolerance described. Such packing if generally practiced will contribute materially to the satisfaction of consumers as well as reducing some of the re-handling costs of marketing.

In marketing, a producer must recognize the fact that his product frequently has to be entrusted to others. Efficiency in guarding quality is an important characteristic of an efficient marketing agency. Unless marketing agencies do guard this quality of the product much good work done by the producer and shipper in trying to build a favorable reputation with both dealers and consumers is likely to be lost. There were instances, however, where potatoes were passed on to the consumer including a large percentage of defects, indicating that part of the problem of undergrade potatoes found in the wholesale

markets, or found in the retail packages in the homes of consumers, must be solved at shipping points in Maine.

There are means at the disposal of Maine potato growers and shippers by which they may adopt an aggressive attitude toward their marketing problems. They might make some progress in the solution of this problem by having their properly constituted administrative authorities work with those in the Commonwealth of Massachusetts, and the city of Boston, to secure more careful regulation of marketing practices in the Boston market. Another suggestion is that the producers through their own marketing association carry their own potatoes into the Boston market, performing at least the initial distribution service there.

SOME PACKAGING PRACTICES

The proportion of the potato crop falling in the various grades depends largely on production factors. In 1939, for instance, a drought occurred in the latter part of the growing season, as a result of which the individual potatoes were characteristically small in size as compared with the average of many other crops. This decrease in the percentage of large potatoes considerably increased the proportion that was too small to grade U. S. No. 1. Conditions such as these raise a serious question as to what should be done with the small potatoes. Frequently the recommendation is made that these potatoes should be withheld from consumption altogether. Another suggestion is that since all potatoes are likely to have some value in the market, the problem is not that of withholding the least desirable, but rather that of adequately identifying them for the consumers' protection so that a closer relationship between price and quality might be developed. Undoubtedly some shippers and dealers at the present time include in their selling policy one or the other of these proposals. Nevertheless, it is equally certain that some dealers follow a third practice which is

^{13/} Data showing consumers' recognition of the presence of defects in packages of potatoes will be reported in a later release.

Table 7 - GRADINGS OF 412 BRANDED PECK PACKAGES OF POTATOES
 ACCORDING TO PERCENTAGE OF DEFECTS BY U. S. NO. 1 STANDARDS
 IN BOSTON RETAIL STORES, MARCH AND APRIL 1940

PERCENTAGE OF DEFECTS TO U.S. NO. 1	STORE GROUPS				TOTAL	STORE GROUPS				TOTAL
	A	B	C	D		A	B	C	D	
	(Number of Gradings)					(Percentage of Gradings)				
None	2	5	17	7	31	2.7	7.9	9.8	6.9	7.5
6 or less	34	32	98	55	219	45.9	50.8	56.3	54.5	53.2
7 - 10	26	14	38	29	107	35.1	22.2	21.8	28.7	26.0
11 - 15	5	6	13	5	29	6.8	9.6	7.5	5.0	7.0
16 - 20	2	5	7	3	17	2.7	7.9	4.0	3.0	4.1
21 or more	5	1	1	2	9	6.8	1.6	.6	1.9	2.2
Total	74	63	174	101	412	100.0	100.0	100.0	100.0	100.0

that of either mixing sizes and qualities, and making the better potatoes carry as many as possible of smaller size, or inferior quality, through the market; or repacking lots both in 100-pound or in peck-sized packages, and changing or removing grade names for the same purpose.

On occasion potatoes having so many minor defects as to be refused classification under the Federal standards, but having good size and free from soft rot will sell at prices almost as high as potatoes graded U. S. No. 1, but of small size. These facts are largely the basis upon which the practice of mixing potatoes in the Boston markets has been built. "Unclassified" potatoes (those not sorted to meet requirements of any grade and usually called culls) have a very wide range of price depending on the character of the defects which made them culls. Although such potatoes may be priced very close to the lower range of U. S. No. 1, it is not unusual for price spreads between culls and U. S. No. 1 to be as wide as 50 to 75 cents per 100 pounds. ^{14/}

Cull potatoes of good size are sometimes mixed with the better grades provided there is no soft rot present and price spreads between wholesale grades are sufficiently wide. This

demand for small and undergrade potatoes on the part of some wholesale dealers is in part a reflection of the pressure exerted by retailers to whom price competition is important. By mixing qualities or repackaging, retail prices may be reduced and at the same time wholesale operating margins may be increased.

In general, consumers do not want small potatoes. ^{15/} Consumers, however, are likely to accept a few small potatoes in a package, not because they prefer them but because custom has dictated that they are likely to be in the retail package. This is particularly true in a season like that of 1939-40 when the crop was composed of a large percentage of small potatoes.

Dealers, including retailers, therefore, are between two opposing lines of pressure. The one is the desire to furnish consumers with a well-sized potato free from defects. The other is market requirement for low prices. The two are inconsistent since a package with contents, all of which are beyond criticism, usually cannot be bought at prices low enough to permit resale in competition with packages containing average quality.

^{14/} The mixing practice probably varies considerably from year to year. The 1939 crop was of small size. Resulting price differentials between grades were wide and encouraged mixing. In years when the potato crop is characteristically of large size, with good quality, and with lower prices which usually accompany such a crop, mixing is not likely to be so attractive.

^{15/} See reference cited in footnote 12.

An example of the mixing procedure with its gains is offered, assuming U. S. No. 1 potatoes to be selling at \$2 per hundredweight, and culls at \$1.50 per hundredweight, which was not an unusual differential in the spring of 1940. The total cost of two 100-pound bags of potatoes mixed would be \$3.50 or \$1.75 per hundred pounds. If salable at the market price for U. S. No. 1 of \$2 there is a gross margin of 25 cents per 100 pounds to cover the cost of the mixing. The mixed lot would probably be sold at a discount from the price of U. S. No. 1, but a substantial increase in gross margin might still result. ^{16/}

sumers. They can dispose of the lower grades at prices usually above those paid for by-product uses. They also supply consumers who want potatoes at a lower price.

Less mixing of grades is reported now than formerly. It seems likely that the decline in the practice of mixing is related to the introduction of the peck package. This peck package put up at Boston may accomplish approximately the same results as mixing, since these packages usually go directly to consumers without further inspection. Packaging in pecks is more expensive than mixing but potatoes sold in these packages are usu-

Table 8 - GRADINGS OF 396 LOTS FROM BULK POTATOES
ACCORDING TO PERCENTAGE OF DEFECTS BY U. S. NO. 1 STANDARDS
IN BOSTON RETAIL STORES, MARCH AND APRIL 1940 ^{1/}

PERCENTAGE OF DEFECTS TO U.S. NO. 1	STORE GROUPS				TOTAL	STORE GROUPS				TOTAL
	A	B	C	D		A	B	C	D	
	(Number of Gradings)					(Percentage of Gradings)				
None	-	-	-	7	7	-	-	-	3.7	1.8
6 or less	18	13	57	86	174	39.1	38.2	44.5	45.8	43.9
7 - 10	14	8	38	45	105	30.5	23.5	29.7	23.9	26.5
11 - 15	7	4	16	20	47	15.2	11.8	12.5	10.6	11.9
16 - 20	3	6	10	14	33	6.5	17.7	7.8	2.5	8.3
21 or more	4	3	7	16	30	8.7	8.8	5.5	8.5	7.6
Total	46	34	128	188	396	100.0	100.0	100.0	100.0	100.0

^{1/} The 396 bulk gradings were classified as to size in table 10. The fact that some of the lots had been previously subjected to consumer selection probably limits comparability of these lots except that in all groups a large percentage of lots contained potatoes under 2-1/4 inches in diameter.

The expense of mixing includes the cost of emptying out bags of potatoes and shoveling them into new bags. This has been previously estimated at about four cents per 100 pounds. To this expense must be added the difference between the cost of the new bag and the reclamation value of the old one, and any shrinkage resulting from the practice.

There are dealers and receivers in the Boston Market who deal in the lower grades of potatoes, principally because they have outlets for them. Such dealers may perform a service to producers, as well as to some con-

ally priced higher and the returns may be just as great.

The wide variation of potatoes in peck packages inspected on the Boston Market substantiates the statement that this type of package lends itself to the marketing of some inferior quality and size. (Tables 7 and 9) Some consumers, however, have become conscious of the wide variation in the quality of potatoes being offered in the peck packages put up before the purchase. A preliminary report released earlier indicated that some consumers were requesting potatoes that were pack-

^{16/} See example, page 21.

Table 9 - GRADING OF 412 BRANDED PECK PACKAGES OF POTATOES
ACCORDING TO PERCENTAGE $2\frac{1}{4}$ INCHES OR MORE IN DIAMETER
AT BOSTON RETAIL STORES, MARCH AND APRIL 1940

PERCENTAGE 2½ INCHES OR MORE IN DIAMETER	STORE GROUPS				TOTAL	STORE GROUPS				TOTAL
	A	B	C	D		A	B	C	D	
	(Number of Gradings)					(Percentage of Gradings)				
0 - 10	-	-	-	2	2	-	-	-	2.0	.5
11 - 20	-	-	1	1	2	-	-	.6	1.0	.5
21 - 30	1	-	1	2	4	1.3	-	.6	2.0	1.0
31 - 40	5	3	1	4	13	6.7	4.8	.6	4.0	3.2
41 - 50	3	7	2	7	19	4.0	11.1	1.1	6.9	4.6
51 - 60	13	10	9	18	50	17.6	15.9	5.2	17.8	12.1
61 - 70	17	11	26	21	75	23.0	17.5	14.9	20.8	18.2
71 - 80	21	16	38	23	98	28.4	25.4	21.8	22.8	23.8
81 - 90	7	12	39	9	67	9.5	19.0	22.4	8.9	16.2
91 - 100	7	4	57	14	82	9.5	6.3	32.8	13.8	19.9
Total	74	63	174	101	412	100.0	100.0	100.0	100.0	100.0

aged at the time of purchase, thereby presenting an opportunity for personal inspection and selection. ^{17/}

During part of March and April gradings of potatoes were made in some retail stores in Boston. These gradings for 412 peck packages are summarized in table 7. Under "A", "B", and "C" are shown gradings in large chain store units and under "D" are shown the gradings in independent retail stores and small chains buying most of their supplies in Boston. This table shows that defects in excess of the six percent tolerance to U. S. No. 1 were found in all store groups. Of the total 412 gradings in peck packages, 162 or 39.3 percent included more than six percent of defects to the U. S. No. 1 grade at the time of grading. In some instances peck packages offered in "D" stores were not represented as U. S. No. 1.

A comparison of gradings for bulk potatoes for sale in retail stores is shown in table 8. Many of these did not have grade marks. Included in the total of 396 gradings were 215 or 54.3 percent which had more than six percent defects to the grade of U. S. No. 1.

Bulk potatoes in retail stores are likely to have been picked over in the process of consumer selection. In some instances, therefore, the defects remaining in a package or bin at the time of grading may be greater than was the case when the package was first opened.

Potatoes were classified as to the percentage measuring two and one-fourth inches or over in diameter in each lot graded. This size was selected as satisfactory to most consumers. Grading of 412 peck packages, as shown in table 9, shows that independent stores had a larger percentage of packages containing small potatoes than did the chains. Group "C" had much more satisfactory sizing from the consumers' point of view than any other group as classified here.

In table 10 are shown the distribution of gradings of 396 lots from bulk potatoes in chain and independent stores according to percentage measuring two and one-fourth inches or more in diameter.

IMPORTANCE OF UNDERGRADE POTATOES IN CONSUMER PACKAGES

As previously indicated, the inclusion of a large percentage of defective or small

^{17/} See page 8 of reference cited in footnote 12, page 23.

Table 10 - GRADING OF 396 LOTS FROM BULK POTATOES
ACCORDING TO PERCENTAGE $2\frac{1}{4}$ INCHES OR MORE IN DIAMETER
AT BOSTON RETAIL STORES, MARCH AND APRIL 1940 ^{1/}

PERCENTAGE 2½ INCHES OR MORE IN DIAMETER	STORE GROUPS				TOTAL	STORE GROUPS				TOTAL
	A	B	C	D		A	B	C	D	
	(Number of Gradings)					(Percentage of Gradings)				
0 - 10	-	-	1	-	1	-	-	.8	-	.3
11 - 20	1	4	1	-	6	2.2	11.8	.8	-	1.5
21 - 30	-	2	6	8	16	-	5.9	4.7	4.2	4.0
31 - 40	-	1	11	4	16	-	2.9	8.6	2.1	4.0
41 - 50	2	5	18	9	34	4.4	14.7	14.1	4.8	8.6
51 - 60	6	3	21	33	63	13.0	8.8	16.4	17.6	15.9
61 - 70	11	9	31	46	97	23.9	26.4	24.2	24.5	24.5
71 - 80	14	6	31	42	93	30.4	17.7	24.2	22.3	23.5
81 - 90	8	4	8	32	52	17.4	11.8	6.2	17.0	13.1
91 - 100	4	-	-	14	18	8.7	-	-	7.5	4.6
Total	46	34	128	188	396	100.0	100.0	100.0	100.0	100.0

^{1/} The 396 bulk gradings were classified as to size in table 10. The fact that some of the lots had been previously subjected to consumer selection probably limits comparability of these lots except that in all groups a large percentage of lots contained potatoes under $2\frac{1}{4}$ inches in diameter.

potatoes in packages sold as high quality has about the same significance to consumer or producer whether accomplished by mixing or by some other process. The tables presented above indicate that many lots of potatoes offered to consumers included a wide range in defects and a wide range in composition as to size.

The practice of mixing potatoes deserves careful study. If it reflects a demand for a particular kind and price which consumers actually want, then it may deserve support. If this is true, however, it is equivalent to saying that the standards and grades to which potatoes are packed prior to delivery to Boston receivers are not satisfactory to the consumer. In this case, study of the practice should be from the point of view of providing potatoes which meet the consumers' requirements because the packing could be done more cheaply at the shipping point in Maine than in Boston. If, on the other hand, the mixing practices only represent an attempt on the part of the distributor and retailer to increase his profit by marketing low quality potatoes at prices nearly equal to

those of better quality, then steps should be taken to place this practice under control. Such a practice leads to consumer dissatisfaction, thus weakening consumer demand.

The practice of mixing potatoes may have an even broader significance to the producers. The demand for low quality for mixing probably increases the price for this quality and, thereby, narrows the price margins between low and high grade potatoes to the producer. At the same time, when these lower grade potatoes are mixed and sold in competition with the higher grade potatoes, it may lower the price for high grade potatoes by increasing the supply offered as high quality and further narrow the margin. At the same time, if it results in consumer dissatisfaction, a decline in demand for potatoes may be experienced. The whole practice, therefore, narrows the margins between potato grades and averages out the quality, making it difficult for a consumer actually desiring top quality potatoes to purchase them consistently. This practice and its results tend to destroy the incentive on the part of producers to pack top quality and, in the long run, tends to make

the packaging and marketing of potatoes on a quality basis more difficult. Such practices expose the producers of an area to loss of income growing out of competition from the same product produced in other areas where these practices are not used. Competition from other food products which are substituted by consumers because of their dissatisfaction becomes more effective. In the long run, it is probably better for the industry as a whole that potatoes going out of Maine should be graded, as closely as possible, according to the desire of consumers who are going to buy and use them. It is probably equally important that the variety, grade, and range in size should be adequately marked on the outside of the consumer package for the consumer's use in purchasing. ^{18/}

It should not be inferred that all potato dealers in Boston mix potatoes to the detriment of producers. Some of them do not maintain sufficient help and equipment to engage in either mixing or the packaging of retail packages. Others who do have help and equipment apparently pack to rigid standards of quality. Neither is it to be inferred that the mixing or inclusion of a wide range of qualities in retail packages is confined to Boston. The effect of these practices is the same wherever performed if in sufficient volume to have any important effect.

In any case, costs of marketing the Maine crop could doubtless be reduced if more grading and packaging were done in Maine. Adequate marking of packages for consumer and retailer information and protection should be practiced. Sizes, grades, and varieties

should be marked on the packages; and prices for each grade should result from demand as expressed through purchases of available supplies.

The significance of the mixing process as discussed above should be considered by Maine potato producers under many aspects. In the first place, since marketing costs would probably be decreased, all services possible should be rendered in Maine, thus decreasing the operations required by the Boston markets and organizations.

To the extent that the mixing practice is designed to increase dealers' margin and if the necessity of dealers' margin arises out of the fact that many of them have insufficient volume to operate without using some such method to increase their margin, then Maine producers should seriously consider the various possibilities by which their potatoes may be passed through Boston wholesale markets without being exposed to these practices.

The existence of this practice in Boston also exposes some of the weaknesses of potato marketing programs designed to protect Boston consumers on a quality basis but operated from Maine. The fact that the potatoes after reaching Boston may be repacked in other packages which resemble the original ones in which they were sent out of Maine, excepting that the quality within the package has been considerably changed, may operate to nullify part of the gains for producers in Maine and for consumers in Boston. In addition, the quality aspects of the mixing process have very serious implications from the point of view of advertising the product.

^{18/} See footnote 12. Further information on quality and price on consumer packages will be released later.



